

What is claimed is:

1. A closure device for sterile closure of a connection of a filter module for dialysis, hemofiltration or ultrafiltration, comprising:
 - a closure element;
 - a wall formed in the closure element having an automatically closing slit-shaped indentation forming a germ-proof closure when closed; and
 - means for fastening the closure element to a connecting tube disposed adjacent to the wall.
2. The closure device according to Claim 1, wherein the closure element is substantially cylindrical, the fastening means are cylindrical surface, and the slit-shaped indentation is formed on an end face of the cylindrical closure element.
3. The closure device according to Claim 1, wherein the closure element is symmetrical about an axis of the connection.
4. The closure device according to Claim 1, wherein the slit-shaped indentation is in the shape of a cross or a star.
5. The closure device according to Claim 1, further comprising a second wall opposite to the wall having the indentation, the second wall having an opening for passage of a fluid.
6. The closure device according to Claim 5, wherein a middle portion of the indentation is aligned with the opening.
7. The closure device according to Claim 5, further

comprising a surface extending around the opening in the second wall, said surface lying in a plane substantially perpendicular to a joining direction of the closure element to the connecting tube.

8. The closure device according to Claim 1, wherein the closure element is formed of one piece.

9. The closure device according to Claim 1, wherein the wall and the closure element are made of plastic.

10. The closure device according to Claim 9, wherein the plastic is silicone.

11. The closure device according to Claim 1, wherein the wall comprises a spring element acting in a radial direction.

12. The closure device according to Claim 11, wherein the spring element is formed by recesses arranged on at least one of a top and a bottom side of the wall.

13. The closure device according to Claim 12, wherein portions of the recesses are circular.

14. The closure device according to Claim 11, further comprising a portion of the wall extending in the longitudinal direction of the indentation that lacks the spring element.

15. The closure device according to Claim 1, wherein the slit-shaped indentation forms a germ-proof closure adapted to withstand a pressure difference up to about ± 0.25 bar.

16. A method for using a closure device for medical items,

comprising the steps of:

disposing a closure element in facing relationship with a connecting tube;

pushing the connecting tube through a wall formed in the closure element, thus opening an automatically closing slit-shaped indentation of the wall forming a germ-proof closure when closed; and

attaching fastening means disposed adjacent to the wall for connecting the closure element to the connecting tube.

17. The method according to Claim 16, further comprising the steps of selecting the medical item to be a filter module for dialysis, hemofiltration or ultrafiltration, and using the connection between the closure element and the connecting tube for in-line sterilization of the filter module.

18. The method according to Claim 16, further comprising the step of placing the closure element on projecting connections of the fastening means.

19. The method according to Claim 16, further comprising the step of inserting the closure element into bushing-like connections of the fastening means.

20. A medical device having a plurality of connections for supplying or removing a fluid from the device, each of said connections comprising:

a closure element;

a wall formed in the closure element having an automatically closing slit-shaped indentation forming a germ-proof closure when closed; and

means for fastening the closure element to a connecting

element disposed adjacent to the wall.

21. The medical device according to Claim 20, comprising a filter module for one of dialysis, hemofiltration and ultrafiltration connected to the closure element.

22. The medical device according to Claim 20, wherein the closure element comprises one of an inside surface forming a germ-proof closure with the outside surface of the connecting element, and an outside surface forming a germ-proof closure with an inside surface of a bushing-like connection.

23. The medical device according to Claim 20, wherein the plurality of connections comprises at least two connections of the medical device, each connection being provided with a closure element.

2025-03-01 10:00:00